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CAPM and Three Factor Model: Empirical Testing From Emerging Market

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ABSTRACT
Relationship between expected return, the size of the firm, and the firm's value empirically tested in this study, with testing in developing countries, namely the Indonesian capital market. This study seeks to test the CAPM model that proposed by Sharpe (1964), Lintner (1965), Mossin (1966), and three-factor model of Fama and French (1993). The results showed that CAPM is alive and well, and the three-factor model is a powerful model for explaining the stock returns in Indonesia and provide a better explanation.
Keywords: CAPM, Fama French Three Factor Model

Introduction

Investors that paying attention to the stock would consider the stock return, which is a return of the investment. The firm's high return should be followed by high risk as well and vice versa. In this case, there are a number of relevant theories related to asset pricing theory. Capital Asset Pricing Model (CAPM) proposed by Sharpe (1964), Lintner (1965) and Mossin (1966) was the beginning of the birth of the theory of asset pricing. CAPM is built based on modern portfolio theory proposed by Markowitz (1959). Markowitz approach model was then called mean variance model, based on the assumption that investors are risk-averse and in the choice of investment portfolios, investors would only see the mean and variance of return of the investment period. One factor model (CAPM) shows that stock returns are expected to relate linearly with market beta. Thus, higher the beta, higher the stock returns.

However, there are a number of difficulties in the CAPM, which is a dynamic world and the return of the portfolio in aggregate wealth is not observable (Jagannathan and Wang, 1996). CAPM not provide explanations on stock returns (Fletcher, 2001). Kothari, Shanken and Sloan (1995) showed that beta can be used to measure the average return in annually intervals, but that does not mean that the beta can capture all variation in expected return as the application of the CAPM. In some studies (Banz (1981), Jagannathan and Wang (1993), Fama and French (1996), Fama and French (2004), Kurniasih (2007)) show that beta not provide enough explanation of the expected return. CAPM research in developing countries, in Hadad, Wibowo and Large (2004), Isnurhadi (2014), Hasan, et al (2015), states CAPM can still be used to predict stock returns.

CAPM is not the only model that gives explanation to the return of a security. Intertemporal Capital Market which was then known as ICAPM by Merton (1973) and the Arbitrage Pricing Theory (APT) by Ross (1976) is a model assumes that return is determined by various factors in the economy and industry. APT then tested empirically by a number of researchers, one of them is Fletcher (2001) comparing the application of CAPM and APT, where APT gives a better explanation on stock returns than the CAPM. Namely the development of the next multifactor three-factor model (TFM) proposed by Fama and French (1993). Three-factor model of Fama and French (1993) states that the expected return can be explained by excess market return, size factor (SMB) and book to market equity factor (HML). Three-factor model seeks to capture more cross-sectional variation in average stock returns (Fama and French, 1996). TFM Fama-French (1993) is a model that displays the best performance consistently in relation to the limitations ICAPM, when investment opportunities are driven first of two moments return aggregate when tested with 25 portfolio size and book-to-market (Maio and Santa-Clara, 2012). Fama and French (1993, 1995, 1996) argues that the three-factor asset pricing model represents equilibrium price determination with the Capital Asset Pricing Model (ICAPM) intertemporal basic of Merton (1973) and the APT of Ross (1976).

The purpose of this study is to test empirically the ability CAPM and TFM in giving explanations on stock returns in developing countries. Specifically, the study also focused capabilities size and value factors in explaining stock returns based on the portfolio formed. Testing is done by forming portfolios based on size and value. At the initial stage (Section II) described on the literature review and hypothesis development, and the next stage (Section III) describes research methods. At the stage of the core of the study (Section IV) test the excess return of common stock, market factors, factors of size and value during ten year period in order to determine the ability of market factors, and the factor of size and value are tested, and TFM are built based on factors market, size and value in capturing changes in stock returns. The following test (Section V) followed by Robustness Test in order to ensure the reliability of the model in explaining the stock return. At the final stage (Section VI) contains a description of the role of CAPM and Fama French TFM which has been tested.

Literature Review and Development Hypothesis CAPM

The risk of an individual stock can be reduced if the portfolio consists of more shares (diversifiable risk), however there is a risk that can't be averse as a result of the diversification that is undiversifiable risk. Risks that can't be diversified called as systematic risk. CAPM is a model that helps calculate the risk that can't be diversified based on the concept of single index model. This concept describes the market conditions were reflected in the market indices and individual stock prices. Based on this concept, explained that when the market improves, the stock prices will increase and when the stock market deteriorates then the stock price will decline. Thus, the individual stock returns can be explained by the return of a market index.

Based on the CAPM theory, the level of expected return E(Ri) in a security equal to the risk free return (Rf) plus a risk premium E(Rm-Rf)βi. The equation indicates that the greater the risk of shares (measured using beta), the higher the risk premium and the higher the expected return on those securities. Expected return is a linear function of the beta (Black, 1972).

$E(Ri) = Rf + \beta i[E(Rm-Rf)]$

Single factor CAPM model in predicting the return of a security experienced a number of debates. However, CAPM proposed by Sharpe (1964), Lintner (1965) and Mossin (1966) still has the support of the results of research conducted Hasan et al (2015), Isnurhadi (2014), Estrada (2002) and is still widely used in its application to the present as in estimating the cost of capital in the firm and evaluate the performance of the managed portfolio (Fama and French, 2004). Difficulty in testing that provide empirical support for the CAPM were static because (1) return the aggregate portfolio is not observed, and (2) CAPM is a static model, while the real world is so dynamic, so the CAPM conditioned can explain cross-section on better stock returns (Jagannathan and Wang, 1996). Based on the theory of single factor models and the research that has been presented, it can be drawn the following hypothesis:

H1: There is a positive influence the excess return on a broad market portfolio. The higher the market factor, the excess return will be higher and vice versa.

Three Factor Model

TFM proposed by Fama and French (1993) is a model that is considered sufficient to provide an explanation of stock returns (Fama and French, 1996). TFM development as a response to accumulating empirical evidence on the CAPM in explaining returns. This model describes the sensitivity of a portfolio in excess of risk-free rate [E(Ri)-Rf] is explained by the sensitivity of the return of the three factors, namely: (1) the excess return on the market portfolio (Rm-Rf), (2) the difference between the portfolio return on small stock and portfolio returns on large stock (Small Minus Big (SMB)), and (3) the difference between the return on the portfolio of high book-to-market stocks and the return on the portfolio of low book-to-market stocks (High Minus Low (HML)). Can be seen in the following equation:

$E(Ri) - Rf = bi[E(Rm-Rf)] + siE(SMB) + hiE(HML)$

Size

Size factors can give an explanation to the return (Fama and French, 1995). Smaller firms are averages have higher risk adjusted return than the big firms, but the size effect is not linear with a market value (Banz, 1981). Tests using a market-based measurement and non market based on firm size measurements showed that the size effect strong influence on the stock market in India (Kumar and Sehgal, 2004). Based on the description, the following hypothesis can be drawn:

H2: There is a negative size effect of the excess return. The smaller size of the firm, higher the excess return.

Value

The value of the firm represented by BE/ME can provide an explanation to the return (Fama and French, 1995). Wu (2011), which conducts research on the Shanghai and Shenzen Stock Exchange (SSE and SZSE) shows that there are significant research value of the firm at SSE. Chan and Lakonishok (2004) show the value plays an important role in the return. The different results generated by Kothari, Shanken and Sloan (1995) using industry-level data on the S&P indicates that the book-to-market does not have a significant correlation with the return. The influence of book-to-market equity becomes insignificant during the period of 1990 to non-financial firms on the NYSE, AMEX, and Nasdaq (Chou, Chou and Wang, 2004). However, the rational, the market short-term variations in return should have little impact on the stock price, and BE/ME should relate to long-term gains on stocks (Fama and French, 1995). For that, a hypothesis that can be concluded with the assumption that the average return is determined by a rational pricing, namely:

H3: There is a positive influence on the value of the excess return. The higher value of the firm, the excess return will be higher.

Fama and French (1992) found that there are two variables ME and BE/ME can capture more of the average cross section stock return. Testing size and BE/ME based portfolio that reflects the risk factors related to the size

and BE/ME can add substantial variation in stock returns are explained by stock portfolios formed (Fama and French, 1993). Thus, the following hypothesis is built:
H4: TFM involving market factor, size and value is a model that could provide an explanation for the excess return.

RESEARCH METHODS

Data and Sample

This research was conducted with observational data during the period December 2002 to December 2012. The research sample is a sample of the population that involves all firms listed on the Indonesian Stock Exchange (BEI), a firm that has at least the minimum registered in 2001, with a total of 284 corporate firms. In contrast to the criteria made by Fama and French (1993), this study include all sectors including the financial sector because the TFM may be considered appropriate to give an overview on the financial sector (Hamid, et al, 2011), especially on the banks listed on the Karachi Stock Exchange (KSE) in Pakistan. The data used were obtained annual financial statements the firm obtained from the Indonesian Stock Exchange (IDX), daily transaction shares of each firm and Composite Stock Price Index (CSPI), which includes the price and trading volume obtained from Yahoo Finance and the World Investment, as well as the rate the risk free rate of Certificate of Bank of Indonesia (SBI) from The Central Bank of Indonesia.

Measurement Variable

The dependent variable in this study is the excess return. Excess return reflects the additional return on risk-free interest rates that are considered important by investors associated with risk. Excess return is measured by the monthly average return share price of each firm minus the risk-free return (Ri-Rf). The explanatory variables that refer to TFM on Fama and French model of excess return include market factor, size factor, and the value effect. (1) Excess market return factor is the difference between the return on the market portfolio with a risk-free rate (Rm-Rf). Return market, namely the return of Composite Stock Price Index (JCI) in Indonesia and used a risk-free return is the return of Certificate of Bank of Indonesia (SBI). (2) Size effect is measured by market equity. Size premium aims to measure the additional return offered by a small firm dealing with a large firm. This factor illustrates the excess return offered small firm compared with large firm because small firms have a higher risk to the financial flexibility and has a diversified lower compared with large firms, prompting investors to determine the risk premium when they invest in firms that small capitalization. Size factor assessed by forming a portfolio of SMB (Small Minus Big), based on market capitalization refers to the Fama and French (1993, 1996) by multiplying the stock price and number of shares. (3) Value measured is the ratio of book-to-market equity (BE/ME, that is the ratio of book value in the firm's shares to market value) is formed with a portfolio of HML (High Minus Low), which aims to connect the impact of the value premium on return which are expected. Firms with high book-to-market ratio indicates that there is a big difference between the book value and the value of stocks could be due to low investor expectations in making firms more sensitive in the financial and business risk because investors will ask for a premium.

Empirical Testing Model

The portfolio is built based on Fama and French (1993) with the division based on (1) the three categories based on firm size that is 30% Smallest (S), 40% Medium (M), and 30% Biggest (B), (2) the three categories based on the firm value that is 30% Highest (H), 40% Medium (M) and 30% Lowest (L). Formation of portfolio size and value in this study, namely each with three categories (1) ME is 30% Small (S), 40% Medium (M) and 30% Big (B), (2) BE/ME is 30% High (H), 40% Medium (M) and 30% Low (L). SMB is the difference between simple average return on a portfolio of Small and Big {(SH + SM + SL) / 3 - (BH + BM + BL) / 3}. HML is a simple average return on the portfolio of High and Low B/M {(HS + HB) / 2- (LS + LB) / 2}. Formation factors into three categories of size and value factors into two categories according to Fama and French (1993) which states that the value factor (BE/ME) have a stronger role on the average stock returns than the size factor. Equation three factors that refers to the Fama and French (1993): $Ri - Rf = \alpha i + bi(RM-Rf) + siSMB + hiHML + \varepsilon i$. Establishment of 18 portfolios with the division based on factors of size (SH, SM, SL, MH, MM, ML, BH, BM and BL) and by value (HS, HM, HB, MS, MM, MB, LS, LM, LB). SH is a portfolio containing stocks were categorized ME small but has a high value and so on. The portfolio is formed from the period January 2003 to December 2012 with the formation of each month.

ANALYSIS DISCUSSION

Establishment of 18 portfolios based on size of the firm (ME) and book-to-market value (BE/ME) with a return based on that establishment as an explanatory variable, and the excess return on the portfolio is formed as the dependent variable in the regression modeling. Formation of such a portfolio is expected to capture the average return on a wider range in giving an explanation on asset pricing equation models (Fama and French, 1993).

Table 1 presents the statistical description of each variable is formed for a period of ten years. The average stock return that is formed has a value that is greater than the risk-free return is the positive difference of 1.5 percent per month, with a standard deviation of 0.0606. Average return on the portfolio is formed based on the size (SMB) and value (HML) yielded negative results, with return respectively by 1.36 percent and 0.98 percent. This value indicates that the share of large firms have a higher return than the small stocks, and stocks with low BE/ME has a relatively higher return than stock with high BE/ME. This is because the observation period there is the financial crisis in 2008, the entire firm's based on the criteria of Initial Public Offering (IPO) in the sample as well as the phenomenon occurring in developing countries, especially firms in Indonesia (as shown in the table). In average, big ME category produced 2.349 per month and the firm's shares are categorized by low BE/ME generate a return of 2.712 percent.

Table 1: Descriptive Statistics for 18 Stock Portfolios Formed on Size and Book-to-Market Equity: 2003-2012, 10 years

Establishment of 18 portfolios formed by Size and Value, from 2003 through 2012 by ME (market value which is the share price multiplied by number of outstanding shares, in which the monthly stock price established based on the average daily stock price) and BE/ME (the book value to market value). Rm is a monthly return based on the average daily return of a market index which reflected JCI in Indonesia, and Rf is the risk-free rate of return monthly with reference to the interest rate of Certificate of Bank of Indonesia (SBI). Size is the difference between the average return of the stock portfolio of small and large firms stocks. Value is the difference between the average return of the stock portfolio that has high and low BE/ME.

Explanatory Variables (Return): Rm-Rf, Size, Value

			Correlation		
	Average	Std Deviation	Rm-Rf	Size	Std Deviation
Rm-Rf	0.0150	0.0606	1.0000		
Size	-0.0136	0.0468	-0.4980	1.0000	
Value	-0.0098	0.0483	-0.2170	0.4260	1.0000

Dependent Variables:
Excess Return 18 Portfolio Based on Size and Value

Size	Value					
	High	Medium	Low	High	Medium	Low
	Means			Standard Deviation		
Small	0.01024	0.00891	0.01454	0.06996	0.06038	0.07306
Medium	0.00775	0.01907	0.03030	0.07451	0.06010	0.06861
Big	0.01261	0.02350	0.03436	0.08109	0.07347	0.06914

Value	Size					
	Small	Medium	Big	Small	Medium	Big
	Means			Standard Deviation		
High	0.01520	0.00476	0.00748	0.07520	0.06708	0.08211
Medium	0.01385	0.02047	0.01715	0.05672	0.06132	0.07614
Low	0.02443	0.03304	0.02389	0.08431	0.07129	0.06854

In the next section, the test is done with regression modeling. Direction of the regression coefficients, t statistical value and the coefficient of determination in the regression can provide evidence of a market factor, size and value in providing an explanation of the changes to the excess return of the ordinary shares. The testing aims to examine the role of these factors in each stock portfolio formed based on the size and value of the firm.

Table 2 shows the role of market factors in explaining the time series of the excess return. Results indicate the slope of the regression line direction for portfolios formed based on the size and value of our respective firms are in the range of 0.490 to 1.155 and 0.599 to 1.137 which confirmed the positive beta, which is a market factor reflects changes in the same direction with the return of each stock. Large stock portfolio tends to have larger β than one that reflects changes in stock returns greater than market returns. High-value stock portfolio has a lower

average β (β=0.841) compared with the average β in low-value stocks (β=0.999) indicating that low-value stocks are more sensitive to market risk. The ability of market conditions in the stock returns reflect the following risks entirely statistically significant, with a value of at least 6.654 statistic t on the portfolio are formed. A reflection of the risk and return of the largest markets at risk and stock returns that have a low value with the largest size is 83.2 percent with a standard error of 0.025 and a large stock portfolio with medium value is 80.3 percent with a standard error of 0.026. Market risk capture variation of stock returns are smaller in small-cap stocks for high, medium, and large value, namely 32 percent, 35.5 percent and 33 percent.

Table 2: Regressions of Excess Stock Return on the Excess Stock-Market Return: 2003-2012, 120 months
Excess stock return (R-Rf), R is the average monthly return obtained from the daily return of each individual stock in the portfolio formation. Rf is the risk-free monthly returns reflected from the SBI. Excess market return (Rm-Rf), where Rm is the monthly return that comes from the daily average return of the stock market reflected the return of JCI. Each 9 portfolio formed by size and value. The coefficient of determination refers to the value of Adjusted R-Square.

$R_{(t)} - Rf_{(t)} = a + b[Rm_{(t)}-Rf_{(t)}] + e_{(t)}$

		Size b			t(b)		
		Small	Medium	Big	Small	Medium	Big
Value	High	0.649	0.783	1.092	6.654	10.866	14.746
	Medium	0.490	0.740	1.056	6.672	11.629	18.267
	Low	0.795	1.155	1.046	8.946	11.090	24.103
		R^2			s(e)		
		Small	Medium	Big	Small	Medium	Big
Value	High	0.267	0.496	0.645	0.064	0.048	0.049
	Medium	0.268	0.530	0.741	0.049	0.042	0.033
	Low	0.425	0.513	0.832	0.050	0.061	0.025

		Value b			t(b)		
		High	Medium	Low	High	Medium	Low
Size	Small	0.660	0.599	0.903	7.558	8.160	7.715
	Medium	0.935	0.709	0.821	12.565	11.086	9.495
	Big	1.137	1.000	1.103	17.471	21.736	11.435
		R^2			s(e)		
		High	Medium	Low	High	Medium	Low
Size	Small	0.320	0.355	0.330	0.058	0.048	0.077
	Medium	0.571	0.506	0.435	0.044	0.042	0.050
	Big	0.719	0.803	0.528	0.043	0.026	0.056

The ability of non-systematic risk, that the size and value of the firm in providing explanations on stock returns is tested and summarized in Table 3. The results show that HML reflecting factors influence the value of the firm provides a relatively consistent, stock category of high and medium value with positive direction.
SMB reflecting the size of the firm can also capture changes in stock returns were relatively consistent in shares of medium and large category with a negative direction. T values were not statistically significant coefficients occur particularly in (1) the positive direction in the portfolio firm's value category of small and medium-scale category, (2) low-value and small size stocks.

SMB and HML testing, showed that the use of size and value factors have limited ability in explaining the stock returns. Formation of the portfolio based on the size of the firm shows size factor may provide an explanation at a maximum of 25.1 percent with a standard error of 0.070, while the establishment of a portfolio of stocks based on the value of the firm can provide an explanation at a maximum of 25 percent with a standard error 0.071. In general, the size and value of the firm play an important role, especially in firms belonging to the category of large firms, with the capability descriptors above 20 percent.

Table 3: Regressions of Excess Stock Returns on the Mimicking Returns for the Size (SMB) and Book-to-Market Equity (HML) Factors: 2003-2012, 120 month

Excess stock return (R-Rf) is the average monthly stock return obtained from the daily return of each stock that formed portfolio minus the risk-free return SBI monthly. Size reflected from the SMB (Small Minus Big) and a value that is reflected from HML (High Minus Low) which is a return every month obtained from the daily return of each common share based on size and value. SMB calculated based on the difference between the average return of the three portfolios of small firms based on the value of the firm (Small High, Small Medium and Small Low) with the average return on three big firms based on the value of the firms portfolio (Big High, Big Medium, and Big Low). HML is the return of each month the portfolio is formed based on the difference between the average of the two firms portfolio with a high value based on the size of the firm (High Small and High Big) with the average return on the two portfolios with value that is lower by the size of the firm (Low Small and Low Big). The coefficient of determination refers to the Adjusted R-Square.

$R_{(t)} - Rf_{(t)} = a + sSMB + vHML + e_{(t)}$

		Size					
		s			t(s)		
		Small	Medium	Big	Small	Medium	Big
Value	High	0.383	-0.100	-0.692	2.906	-0.756	-4.960
	Medium	0.155	-0.251	-0.664	1.395	-2.134	-4.893
	Low	0.320	-0.281	-0.691	1.607	-2.585	-5.874
		v			t(v)		
		Small	Medium	Big	Small	Medium	Big
Value	High	0.620	0.045	0.583	4.783	0.347	4.246
	Medium	0.045	0.203	0.253	0.412	1.750	1.892
	Low	-0.708	0.125	-0.211	-3.612	1.199	-1.827
		R^2			s(e)		
		Small	Medium	Big	Small	Medium	Big
Value	High	0.201	-0.011	0.250	0.067	0.067	0.071
	Medium	0.001	0.044	0.174	0.057	0.060	0.069
	Low	0.101	0.051	0.234	0.102	0.087	0.060
		Value					
		s			t(s)		
		High	Medium	Low	High	Medium	Low
Size	Small	0.226	0.194	0.373	1.796	1.645	2.719
	Medium	-0.369	-0.222	-0.176	-2.653	-1.920	-1.303
	Big	-0.813	-0.725	-0.617	-5.907	-5.639	-6.083
		v			t(v)		
		High	Medium	Low	High	Medium	Low
Size	Small	0.559	0.041	-0.324	4.506	0.350	-2.400
	Medium	0.387	0.196	-0.046	2.833	1.718	-0.345
	Big	0.378	0.107	-0.167	2.794	0.847	-1.717
		R^2			s(e)		
		High	Medium	Low	High	Medium	Low
Size	Small	0.156	0.007	0.083	0.064	0.060	0.070
	Medium	0.096	0.036	-0.001	0.071	0.059	0.069
	Big	0.251	0.203	0.240	0.070	0.066	0.081

Testing SMB and HML without the presence of market factors indicate a low share in giving explanations on stock returns that can capture changes the maximum return of 25.1 percent of common stock. This indicates that the stock return other than described by the unsystematic risk is also influenced by the systematic risk. To that

end, research as Fama and French (1993), the tests directed at the role of systematic risk is represented by the market risk that is reflected in the excess market return in testing unsystematic risk associated with the size and value of the firm. In Table 4, indicated that consistently provide a reflection on the aspects market stock returns in the same direction, which are all statistically significant at all portfolios are formed. There are only three portfolio with a value of t greater than 7, and overall had a t value greater than 12. The market factors indicate an important role in providing an explanation of the changes in stock returns.

SMB showed negative effects, but less consistent, positive influence on the firm's dominant place that small and medium sized with a value of t over 1.96. HML showed a positive effect on returns, especially in the firm of high value and medium enterprises. HML influence the opposite direction occurred in the category of low-value stocks. It supports research Fama and French (1993), which suggests that the effect size has a negative influence especially large stock portfolio category and the overall effect size has a positive effect. The results also consistently supported research Fama and French (1993) by testing TFM, in which the overall effect of value had a negative impact, especially on a stock portfolio that category of low value and tend to be positive on the stock that has medium and high value. The interesting is the market factor, factor of firm size and value of the firm provide greater explanation than the previous test. Tests that only incorporated aspects of the market (Table 2) resulted in the explanatory ability of 26.7 percent to 83.2 percent for portfolios formed based on the value and size, as well as the explanatory ability of 32 percent to 80.3 percent in the portfolio is formed based on size and value. Aspects of the firm (Table 3), which results in the ability to provide an explanation for the excess return of common stock with the largest value that is 25.1 percent. Testing TFM involving market factor, size and value can capture the variations of the excess return of common stock that is a minimum of 39.1 percent is in stock category that has a high value with a large size and provide high explanations on stock returns of 85.3 percent is in stock with big category. This demonstrates the ability of TFM better at capturing variations in average stock returns by involving the systematic risk and unsystematic risk.

ROBUSTNESS TEST

Tests comparing the ability of market factors of Sharpe (1964), Lintner (1965), Mossin (1966) and TFM Fama and French (1993) in giving an explanation to the stock return, shown in Table 5. On average, market factors have the ability to provide an explanation for the stock returns amounting to 51.58 percent, while TFM Fama French factors which include the market, value and size factor tend to provide an explanation of 63.66 percent, which is better able to capture the variations in stock returns (12.08 percent higher compared to a single factor). TFM Fama French provides better explanation than the CAPM (performed by t test). Results showed that t value of -2.754 statistically significant.

Table 4: Regressions of Excess Stock Returns on the Excess Market Return (Rm-Rf) and Book-to-Market Equity (HML) Factors: 2003-2012, 120 months

Excess stock return (R-Rf) is the monthly return of the portfolio acquired from the daily return of each stock that formed the portfolio return, less the risk-free rate of return (monthly SBI). Excess market return (Rm-Rf) is the excess return on each portfolio. Rm is a monthly return that comes from the daily return of the stock market (JCI). SMB (Small Minus Big) is a return that reflects the size of the firm, in which the SMB obtained from the difference between small firm stock returns with large firm stock return. HML (High Minus Low) is a return that reflects the value of the firm, where HML obtained from the difference between the return of the ME/BE with a low height. The coefficient of determination refers to the Adjusted R-Square.

$R_{(t)} - Rf_{(t)} = a + b[Rm(t)-Rf(t)] + sSMB + vHML + e_{(t)}$

		Size					
		b			t(b)		
		Small	Medium	Big	Small	Medium	Big
Value	High	1.355	1.061	1.071	14.005	14.436	14.599
	Medium	0.714	0.979	1.077	9.810	14.440	16.386
	Low	1.438	1.166	0.463	12.476	9.707	7.058
		s			t(s)		
		Small	Medium	Big	Small	Medium	Big
Value	High	1.272	0.279	-0.021	10.150	3.980	-0.225
	Medium	0.602	0.159	0.085	6.386	2.456	1.011
	Low	1.221	0.088	-0.054	8.174	0.559	-0.861
		v			t(v)		
		Small	Medium	Big	Small	Medium	Big

Value	High	0.781	0.029	0.524	7.228	0.466	6.400
	Medium	0.006	0.140	0.117	0.075	2.474	1.789
	Low	-0.786	0.082	-0.213	-6.105	0.686	-3.889
		R^2			s(e)		
		Small	Medium	Big	Small	Medium	Big
Value	High	0.696	0.641	0.733	0.056	0.051	0.042
	Medium	0.449	0.661	0.744	0.042	0.047	0.033
	Low	0.613	0.506	0.391	0.067	0.060	0.046

		Value					
		b			t(b)		
		High	Medium	Low	High	Medium	Low
Size	Small	0.954	0.875	0.985	14.031	13.316	12.319
	Medium	1.085	0.984	1.008	22.985	13.042	10.998
	Big	1.078	1.023	1.191	15.484	23.215	10.379
		s			t(s)		
		High	Medium	Low	High	Medium	Low
Size	Small	0.824	0.742	0.990	9.354	8.718	9.556
	Medium	0.180	0.167	0.172	3.982	2.321	1.966
	Big	-0.138	-0.064	-0.038	-1.532	-1.517	-0.403
		v			t(v)		
		High	Medium	Low	High	Medium	Low
Size	Small	0.507	-0.007	-0.378	6.675	-0.097	-4.228
	Medium	0.132	0.146	-0.071	3.350	2.330	-0.926
	Big	0.320	0.017	-0.227	4.111	0.468	-3.524
		R^2			s(e)		
		High	Medium	Low	High	Medium	Low
Size	Small	0.684	0.604	0.600	0.039	0.038	0.046
	Medium	0.831	0.613	0.515	0.033	0.053	0.064
	Big	0.754	0.853	0.570	0.040	0.031	0.053

Table 5: Testing Model in Explaining Stock Return

Testing model using the t test, comparing the adjusted coefficient of determination on the CAPM and TFM on 18 portfolios formed. Use of Adjusted R Square made to ensure accuracy in testing.

	Mean	Std. Deviasi	s(e) mean	t
Market Factor	0.515778	0.176877	0.041690	-2.754
Three Factor	0.636556	0.123890	0.029201	

Conclusion

This study examined the ability of CAPM and TFM Fama French in giving explanations on stock returns, particularly in its application to the emerging markets. The test results along with Banz (1981), in which the testing without involving the market factor, the size effect tend to be consistent with the negative direction. Value factor plays an important role in explaining stock returns (Fama French (1995), Wu (2011), Chan and Lakonishok (2004). Supporting research TFM Fama and French (1993), size factor of the firm tend to be negative direction while the value effect on the stock of high and medium value category has a positive direction influence the stock return. The test results of CAPM model showed that model developed by Sharpe (1964), Lintner (1965) and Mossin (1966) is a model that is consistent in giving explanations on stock returns, with a positive direction. TFM testing by using a market factor, size factor and the value of the firm provide a better explanation for the change of return. Results showed that as Fama and French (1993), found that the factor of size (BE) and value (BE/ME) may provide an explanation of stock returns, and reflection of the size and value effect will be stronger when entering a market factor into testing. Overall, the portfolio formed indicates that TFM Fama French (1993) is relevant in explaining the stock return, to be indicated by the coefficient of determination and statistically high significant and low error. The test results is consistent with the version of multifactor Merton (1973) associated with Intertemporal Asset-Pricing Model in which the size of the firm and BE/ME is a sensitive proxy associated with stock returns.

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